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28 September 1978

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SCIENTIFIC AFFAIRS

No. 602

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CONTENTS PAGE

BIBLIOGRAPHIC DATA SHEET	1. Report No. JPRS 71945	2.	3. Recipient's Accession No.
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TECHNICAL INFORMATION ON ES-1055 COMPUTER SYSTEM

Budapest SZAMITASTECHNIKA in Hungarian Jul-Aug 78 pp 18-19

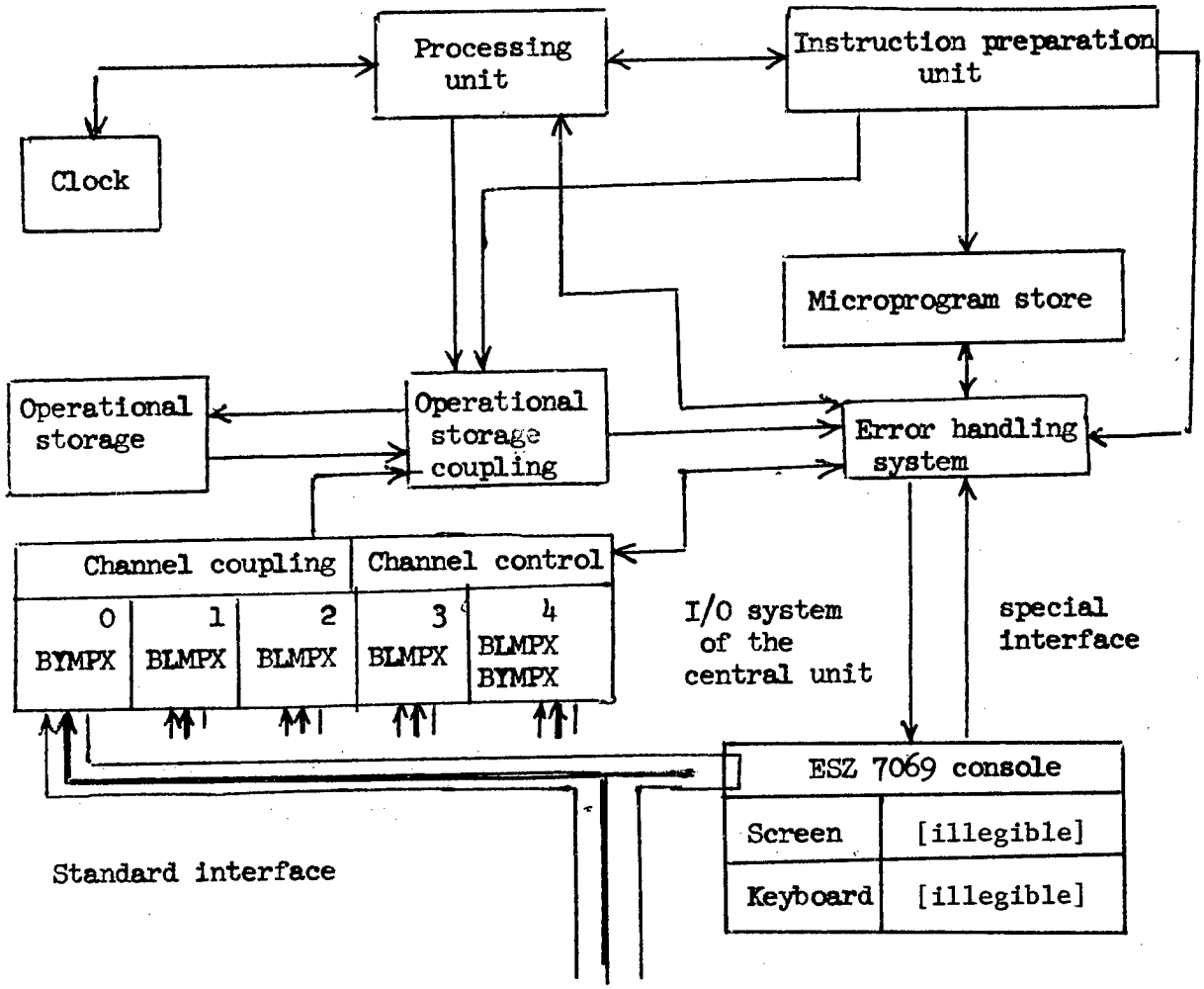
[Article by Dr I. Sz.: "Technical Data for the ESZ 1055"]

[Text] In our January issue we reported briefly on the first member to be prepared of the ESZR [Uniform Computer Technology System] 2 series, the ESZ 1055 computer developed in the GDR. In the time since then we have received more detailed information about the machine, at the Spring Leipzig Fair among others, which we will publish in the present and in following issues, with regard to the lively interest to be expected in the ESZ 1055. In order to provide a better understanding of the possibilities offered by the equipment we consider it necessary to give detailed information on the technical data and possible configurations of the machine. (The editors)

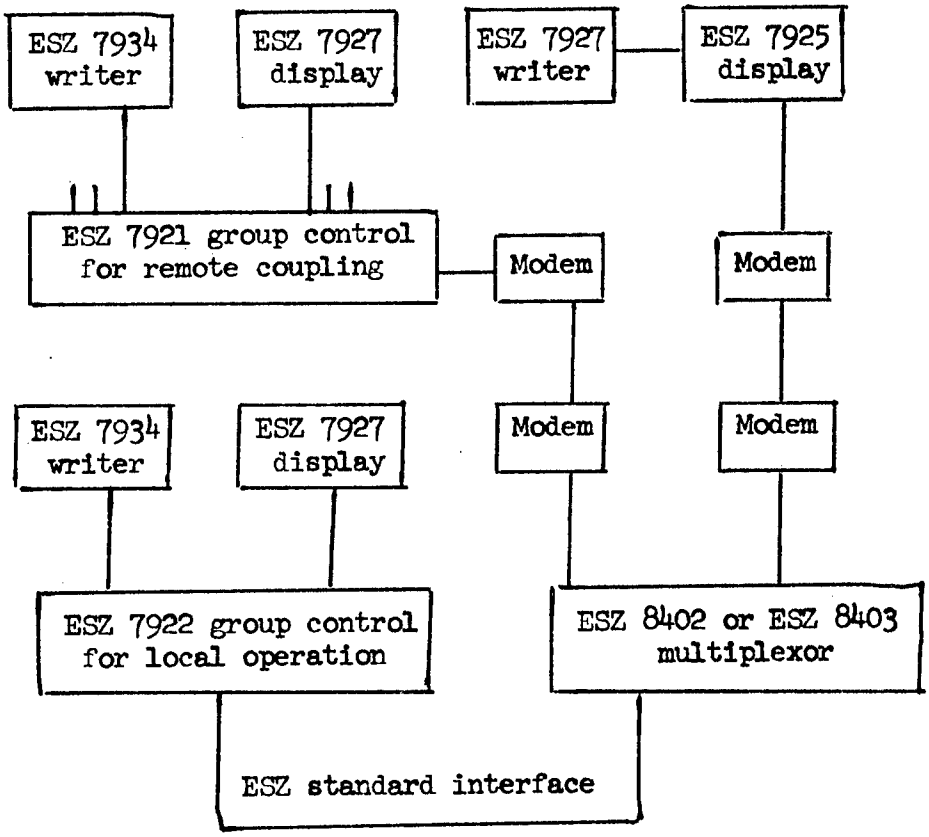
Development of the system began at the end of 1975 and its first public display was at the Spring Leipzig Fair. It is expected that the system will be released for ESZR approval in 1978 and according to our information series manufacture and export will start in 1980. The capacity of the equipment corresponds best to that of the IBM 370/158, the Siemens 7750 or the Honeywell-Bull 66/40. Within the ESZR series it stands closer to the R-45 than to the R-60.

The following mixed configuration was displayed at the Leipzig Fair:

ESZ 2655	central unit with 1 Mbyte central storage
ESZ 7069	console (display and matrix printer)
ESZ 7033	line printer
ESZ 7062-2	microfilm output (COM)
ESZ 5503	magnetic tape control
ESZ 5004	magnetic tape unit, 2 each
ESZ 5517	magnetic tape control
ESZ 5017-2	magnetic tape unit, 2 each



Block Schematic of the ESZ 2655 Central Unit and the ESZ 7069 Console



Schematic of the 7920 System

As can be seen, this lacks the 100 or 200 Mbyte capacity large discs and although these arrived from Bulgaria just before the fair they could not be connected.

The developments characteristic of the ESZ 1055 can be summed up as follows: manufacturing technology; greater element density; virtual storage technique; timing units (daily clock, hour time comparator, central unit pace setter, interval time setter); monitor unit; program event registration; complementary interrupt system; increased precision floating decimal arithmetic; new command set; error correction codes in operational storage; block multiplex channel; 2 byte interface; emulator; greater speed, greater central storage capacity; connection of new peripherals (large capacity exchangeable disc storage, fast magnetic tape units, remote data processing equipment, display screen, microfilm); matrix module (array processor); channel-channel adapter; greater reliability, availability and simpler operation.

The ESZ 1055 and the associated OS/ESZ 6.0, 6.1 and 6.2 operational systems, the new variety of peripherals and the greater emphasis on remote data processing make possible the utilization of the system in such special areas as substitution, information and process control; computer networks; and hierarchical systems.

The Most Important Parameters of the Central Unit

For the sake of better understanding we will compare the parameters of the central unit of the ESZ 1055 and of the central unit of the ESZ 1040:

	ESZ 1040	ESZ 1055
Central Unit	(CPU 2640)	(CPU 2655)
control	mixed, that is, microprogram and series control	
microprogram storage capacity	3K words 130 bits per word	8K instructions 65 bits per instruction
cycle time	450 ns	400 ns
access time	120 ns	140 ns
instruction store	143	183
operation speed	380,000 operations/s	450,000 operations/s
(according to Gibson mix)		
Operational Storage		
type	ferrite ring	semi-conductor (MOS)
structure	256 Kbytes	512 Kbytes
steps	512 Kbytes 1,024 Kbytes	1,024 Kbytes 2,048 Kbytes
cycle time	1,350 ns	1,200 ns
access width	8 bytes	8 bytes
storage protection	writing protection	reading and writing protection

With the use of a special ECC code it is possible to correct one faulty bit in operational storage and to detect all two bit errors and most multiple bit errors.

Channels		
total number	7 max.	5 max.
selector channels	6 max.	--
block multiplex channels	--	4 max.
byte multiplex channels	1	2 max.
equipment control units which can be connected to one channel	10 max.	10 max.
basic structure	1 multiplex channel 1 selector channel	1 byte-multiplex channel 2 block multiplex channels
complementary versions for the ESZ 2655 CPU		a) 1 byte-multiplex channel 1 block multiplex channel b) 2 block multiplex channels
transmission speeds	one selector 1.3 Mbytes/s	one BLMPX 1.5 Mbytes/s (1 byte interface) 3.0 Mbytes/s (2 byte interface)
	two and three selector 550-1,100 Kbytes/s	
	four, five and six selector 300-900 Kbytes/sec MPX in multiplex operation up to 40 Kbytes/s in monopole operation 180-700 Kbytes/s	two, three and four BLMPX 1.5 Mbyte/s MPX in multiplex operation up to 40 Kbytes/s in monopole operation 1.5 Mbytes/s
number of subchannels	MPX 128-256	128 256 for the second MPX channel

As compared to the traditional selector channels the block multiplex channels make possible better utilization of the possible transmission times and thus more efficient data transmission. The so-called 2 byte interfaces serve to further increase the data transmission speeds of the block multiplex channel.

The Variety of Peripherals Belonging to the System

The ESZ 7069 console:

Connected to the central unit via the ESZR standard or special interface.

Exchangeable disc storage:

	ESZ 5061	ESZ 5066	ESZ 5067
--capacity (Mbytes)	29	100	200
--max. capacity/control (Mbytes)	232	800	6,400
--transmission speed (Kbytes/s)	312	806	806
--average access speed (ms)	90	38	30
--number of disc packs driven per unit	1	1	2
--sector address	no	no	yes
--control unit	ESZ 5561	ESZ 5566	ESZ 5567
--manufacturer	Bulgaria	Soviet Union	Soviet Union

The ESZ 5067 exchangeable disc unit is a two unit version of the ESZR 2 series. Its capacity per unit is 200 Mbytes. In this system the units are connected to the ESZ 5567 control unit via a so-called supervisory module--which can control a maximum of 4 stores. A total of 16 ESZ 5004 exchangeable disc stores can be connected in four groups.

Fix disc storage:	ESZ 5064
--capacity (Mbytes)	11.2
--transmission speed (Kbytes/s)	1,500
--average access time (ms)	5
--manufacturer	Soviet Union
--control unit	ESZ 5564
--manufacturer	Soviet Union

Magnetic tape units:

	ESZ 5002-3	ESZ 5017-2	ESZ 5004
--tape speed (m/s)		2	2, 3, 5
--recording process	NRZI	NRZI	NRZI
--recording density (bit/mm)	32 or 64	32	32 or 64
--transmission speed (Kbytes/s)	190	64	126 max.
--number of bands		9	9
--block distance (gap) (mm)		15.2	12.7-15.2

	ESZ 5002-3	ESZ 5017-2	ESZ 5004
--tape dimensions			
length (m)	732	732	732
width (mm)	12.7	12.7	12.7
--manufacturer	GDR	GDR	Czechoslovakia
--control unit	ESZ 5525-01	ESZ 5517	ESZ 5503
--manufacturer	Soviet Union	Soviet Union	Czechoslovakia

The 5503 control unit can handle 8 tape units or a maximum of 16 tape units in the ESZ 1055 system with two control units.

The technical data for the ESZ 5503 tape control are:

--number of tape units which can be connected	8-16
--transmission speed (KHz)	64-318
--running speed of attached tape units (m/s)	2, 3, 5

--supervision of recorded information: cross orientation and longitudinal parity check, error band recognition using CRC character

Punch card readers:

	ESZ 6016	ESZ 6019
--reading speed	1,000 cards/minute	1,200 cards/minute
--reading principle	in line	in line
--operational mode:	1. Reading with recoding. (The KPK 12 code is recorded into the DKOI code. This means that only cards punched in the KPK 12 code can be read.)	
	2. Reading without recoding. (The content of each column of the card goes into the CPU in 2 Byte form directly by bit sample. A translation program translates the information thus conveyed into the DKOI working code. This means that cards coded in a different code than the KPK 12 can be read.)	
--manufacturer	Soviet Union	Czechoslovakia

Punch card punchers:

	ESZ 7013	ESZ 7014	ESZ 7017
--card form	80 column	80 column	80 column
--operational mode	1. punching with recoding (in the KPK 12 code) 2. punching without recoding (in optional codes)		
--punching speed (cards/min)	250	160	
--punching principle	in line	by column	
--number of feeders	1	1	
--capacity of feeders	1,500	1,500	
--number of unloaders	2	2	
--capacity of unloaders	1,300	1,400	
--buffer capacity (bytes)	240	240	
--manufacturer	Czechoslovakia	Czechoslovakia	Soviet Union

Punch tape reader:	ESZ 6022
--connection	ESZR interface
--reading speed	1,000 characters/s
--operational mode	start-stop
--number of channels	5, 6, 7, 8
--reading principle	photoelectric
--code for hole combinations in tape	ISO-7, ISO-8
--buffer store	yes
--check procedure	parity
--manufacturer	Soviet Union
Punch tape puncher:	ESZ 7022
--connection	ESZR interface
--number of channels	5 and 8
--punching speed in start-stop mode	maximum of 150 characters/s
--codes for hole combinations which can be punched in tape	1. KOI-7, with code translation 2. optional 5 or 8 bit code without code translation
--check procedure	odd parity and code probability check built into hardware
--buffer	8 bit data register
--manufacturer	Soviet Union
Punch tape station:	ESZ 7902
--manufacturer	GDR

Line printers:

	ESZ 7031	ESZ 7033	ESZ 7037	ESZ 7039
--writing speed (lines/min)	900-1,800	600-1,100	800-1,000	1,200
--number of paper tracks	1 or 2	1	1	
--writer width (positions/ line)	156	156, 160	132, 150	160
--line distance (mm)	4.23	4.23	4.23	4.23
--character distance (mm)	2.54	2.54	2.54	2.54
--code	DKOI	DKOI	DKOI	DKOI
--number of copies	3-5	3-5	3-5	
--buffer store	yes	yes	yes	yes
--writer	drum	drum	chain	chain
--character repertoire	--	84	84	64
--Latin and Cyrillic capitals		yes	yes	yes
--manufacturer	GDR	Poland	Soviet Union	Czecho-slovakia

Microfilm output (COM): ESZ 7602

A peripheral for the ESZ 1055 equipment. The ESZ 1055 central unit background is a precondition for its operation.

--output speed	6 microfiche/minute or about 250,000 characters per minute
--number of lines	64 characters/field
--character positions	62 or 132 characters
--character repertoire	64 basic characters, Cyrillic characters as expansion
--number of microfiches per cassette	20
--rendering	by 7 x 10 raster
--code	DKOI
--data carrier	microfilm A/6 Typ B/C 16 mm roll film microfiche

In addition to the ESZ 7602 equipment the developing and processing of the microfiches takes place with the traditional microfilm equipment produced by Pentacon.

The ESZ 7602 is characterized by two manufacturing versions: the ESZ 7602/01 by tablet format with insertion and the ESZ 7602/02 by tablet format without insertion. It is manufactured by the GDR.

Plotters:

	ESZ 7051	ESZ 7052	ESZ 7053	ESZ 7054
--type	board	drum	drum	board
--step size (mm)	0.05	0.1	0.1	0.05
--max. plotting speed (mm/s)	50	200	150	50
--plotting surface (mm)	1050x1000	340x360	841x1600	1600x1200
--paper form (mm)	1200x1150	420x80,000	878x20,000	1750x1370
--number of colors which can be used	3	3	3	4
--line thickness (mm)	0.3	0.3	0.3	
	0.5	0.5	0.5	
	0.8	0.8	0.8	
--rendering scale	1:2	1:2	1:2	1:2
	1:1	1:1	1:1	1:1
	2:1	2:1	2:1	2:1
--types of lines		c o n t i n u a l d o t t e d l i n e - p o i n t		
--number of characters which can be rendered	253	64	253	96
--manufacturer	Soviet Union	Soviet Union	Soviet Union	Soviet Union

Display system: ESZ 7920

The parts of this are:

ESZ 7922 group control in local operation (manufactured by GDR and Soviet Union)
ESZ 7921 group control for remote connections (within a maximum distance of 600 meters)
ESZ 7927 local display equipment (manufactured by GDR)
ESZ 7934 writer (manufactured by Czechoslovakia)
ESZ 7925 one-time display, a peripheral for remote data processing with modem coupling (manufactured by Poland)

With local coupling and within a maximum distance of 600 meters the ESZ 7922 display group control unit can handle a maximum of 32 ESZ 7927 and ESZ 7934 units in any ratio desired.

The basic structural units of the display system are: control unit, display and keyboard. The options are: light pen, acoustical signal system and numeric keyboard lock (the so-called "operational lock").

The technical data of the ESZ 7920 display system are:

--information rendering		alphanumeric
--screen capacity	model 1	12 x 40 characters
	model 2	24 x 80 characters
--buffer store capacity	model 1	480 characters
	model 2	1,920 characters
--transmission speed		
in local operation		250 Kbytes/s
remote data processing		600, 1200, 2400 or 4800 bits/s
--character repertoire		96
--writing speed		40 characters/s
--code		DKOI

Robotron ESZ 8404 (MPD 4) multiplexor; linked to the ESZ 2655 central unit via a special coupling control.

--storage	ferrite ring
--cycle time	1.3 µs
--store capacity	8 k words or 16 k words
--word length	16 bits
--peripheral coupling mode:	
interface	SIF 1000
	I/2 ESZR (CCITT according to the V24 standard)
	2 Telex lines in accordance with Postal prescriptions
--number of couplings	maximum of 12
	can be configured through 3 identical couplings per phase
--transmission code	KOI-7 or CCITT Nr 2
--operation speed	in Tx mode, 50, 75, 100 bit/s
	via I/2 ESZR, 100, 200, 600, 1200 (2400) bit/s
	via SIF 1000, in accordance with the control equipment
--transmission mode	start/stop
	via SIF 1000, synchronous
--operational mode	semi-duplex
--versions	AP 4211 for batched processing
	AP 4212 for dialog/real time processing
--manufacturer	GDR

Terminals:

--In interactive operation:
  --ESZ 8501 (made in Bulgaria)
  --ESZ 8570 (made in Soviet Union and Bulgaria)

--Terminals with alphanumeric display:
  --ESZ 8562 (made in Hungary)
  --ESZ 8564 (made in Hungary)
  --ESZ 8504 (made in Soviet Union)
  --ESZ 8514 (made in Poland)

--Semi-automatic data recording system:
  --ESZ 8505 (made in GDR)

Modems:

--ESZ 8002 (made in Hungary, GDR, Czechoslovakia) with a transmission speed of 200 bit/s
--ESZ 8006 (made in Hungary, GDR, Czechoslovakia) with a transmission speed of 600-1200 bit/s
--ESZ 8026 (made in Hungary) with a transmission speed of 600-9600 bit/s.

8984
CSO: 2502

"ESTEL' SYSTEM OF REMOTE DATA TRANSFER DESCRIBED

Budapest SZAMITASTECHNIKA in Hungarian Jul-Aug 78 p 3

[Article by Laszlo Bagonyi, EGSZI]

[Text] The purpose of this article is to describe briefly the system-engineering design of the "ESTEL" system of remote data transfer of Bulgarian development within the ESZR [Unified Computer System] framework, its software complement, some of its applications, and prospects.

General Features

The configuration assembled from components of the "ESTEL" system permits the realization of TAF [remote data transfer] applications, using the computers of the 1st series of the ESZR system (except the R-10) as the corepieces. The connections between the computer and the TAF system are realized with the Type MPD-1 multiplexer; the man-to-computer connections are realized by typewriter- and display-type terminals. The means for establishing connection to postal telephone, telegraphy, or telex networks are modems or telex couplers of various speeds (50, 100, 200, 600, 1200 Baud) (modems of telex interfaces (UPSZ-TG)) with or without automatic calling systems. The connections may be established both in a two-wire system and in a four-wire system through point-to-point (leased) or switched (public) networks.

The ESTEL system also permits the multiple-point coupling of the terminals on the level of the I2 or the I1 interface. In the case of realization on the level of the I2, more than one terminals may use a modem, the distance limit between terminals being 500 meters. In the case of realization on the level of the I1, a terminal may be connected at any single location of a geographically long communitation line which passes through several settlements. Of course, it is also possible to combine the two above-mentioned configurations (see the figure).

The tabulation below lists the hardware units approved for the system and their featured characteristics.

Designation	Code number	Remark
Multiplexer	ESZ 8401	May be connected to leased or public two- and four-wire telephone, telegraphy, and telex networks
Line cabinet	IZOT 401	Single- and dual-frame versions
Terminals	ESZ 8501	Each individual terminal with SOEMTRON 529 typewriter or MOM [Hungarian Optical Works] tape perforator and perforated-tape reader, as well as (optionally) with 200, 600/1200 bps modem and automatic calling unit, telegraphy interface, low-level signal-transmitting unit, and telephone
	ESZ 8501-01 02 03 04 05 06 07 08 09	
	VTS 56100	VIDEOTON product
Modems	ESZ 8001	Speed of 200 bps, optionally with automatic calling unit, cabinet or panel versions
	ESZ 8005	Speed of 600/1200 bps; optionally with automatic calling unit, cabinet or panel versions
Telegraph-type interface	ESZ 8030	Cabinet or panel versions
GDN unit	RSZ 8027	Speed of 600, 1200, 2400, 4800 bps; synchronous or asynchronous, cabinet or panel versions
Telex interface	ESZ 8033	Cabinet or panel versions

Tester I1	Under development
Tester I2	Under development
Impedance interface	Only for I1-level multiple point
I2 cable	Only for I2-level multiple point

The ESTEL 2.1 system, which has already been developed, may be assembled from the above units.

The Software Complement of the System

The basic access methods of the software devices are available in both the DOS and the OS system, specifically

BTAM/DOS, BTAM/OS, QTAM/DOS, QTAM/OS, and TCAM/OS.

In addition,

the ESZR version of the IBM CICS (SUIP) may be run both in the DOS and the OS system;

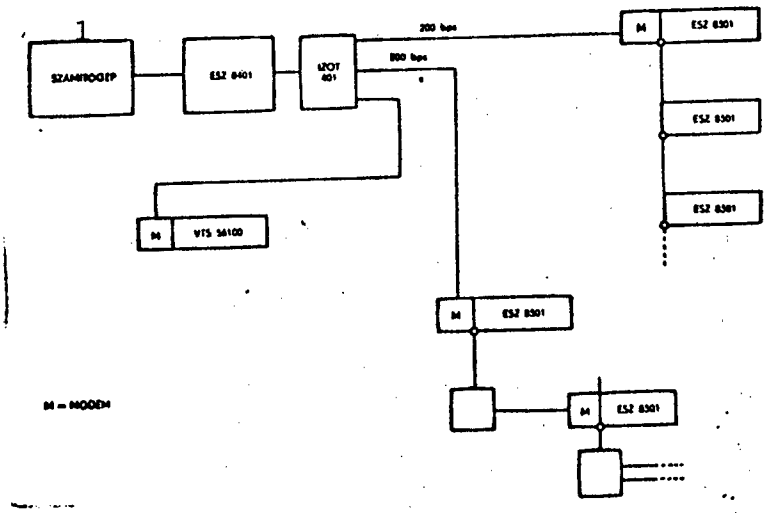
a time-sharing dialog terminal system (IBM TSO - ESZR version), which supports the use of two programming languages (PL/1, BASIC) and offers the opportunity of program injection from the terminal, may be used in the DOS system only;

the ESZR version of the CRJE (Conversational Remote Job Entry)(DIVZ) may be used in the OS system only.

In addition to the above, there is also a system for the preparation and programming of perforated tape used to control numerically controlled machine tools, under the designations of SAPRO and SAPFO, respectively.

Applications

The ESTEL system is capable of realizing any conventional TAF system. So far we lack sufficient information about experiences with operation; all we have is information provided from one or two users and the enterprise in charge of marketing the system.



Key: 1 - Computer

At the present time, about seven or eight systems are in operation in Bulgaria, primarily on an experimental basis, in universities and research institutions. An information interrogating system with VIDEOTON VTS 56100 displays was used with success for about one month during the party congress.

So far Czechoslovakia has purchased two systems.

In Hungary, a minimum configuration—primarily for evaluation and testing—has been put in operation at the Telephone Factory, using the NOTO OSZV [National Organization for Technical Service - National Computer Technology Enterprise] computer installed there as the corepiece. One of the ESZ 8501 terminals of the system operated in the dialog mode over a telephone line during the NJSZT [Neumann Janos Computer-Technology Society] - EGSZI [Construction Management and Organization Institute] - IZOTIMPEX symposium held 11-12 April

During the third quarter of this year, the EGSZI will install a configuration (1 multiplexer, 1 line cabinet, 2 ESZ 8501 terminals, and 3 VTS 56100 terminals). Using a leased or a public line, this system will operate with terminals installed in Budapest and one of the institute's regional centers, using the R-22 computer in Budapest (384 Kbyte central memory, 8x29 Mbyte disk memory, and 8x800 bpi magnetic-tape memory).

Parallel to the introduction of the computers of the ESZ's 2d series, there are plans for the development of the ESTEL 4 system, in which the multiplexer will be replaced with the ESZ 8371 communications processor. The operating system and the computers used as corepieces will support the virtual store management.

2542
CSO: 2502

VIDEOTON COMPUTER FACTORY PREPARES FOR THE 1980'S

Budapest SZAMITASTECHNIKA in Hungarian Jul-Aug 78 p 2

[Article by Mrs Gyorgy Varnai: "Videoton Prepares for the 1980's"]

[Text] Videoton, which by the end of 1978 will probably be able to pride itself on the sale of 750 systems, 1,500 line printers and 6,000 displays, reported on its new computers and terminals at the conference held 12-14 June by the Fejer Megye organization of the Janos Neumann Society of Computer Technology. Through realization of their large-scale developmental ideas the users during the Sixth Five-Year Plan will have at their disposal a computer family made up of compatible members extending from the smallest mini-machines to the mega-minis, modern display and line printer system families and a broad scale of special purpose non-display terminals (process terminals, bank terminals, business terminals, etc.).

The development of instruments and methods for decentralized data processing stands in the center of developmental interest--as was reflected by the presentations and interesting exhibits at the conference too.

On the first day of the conference--after the introduction by economic director Dr Zoltan Marton--Dr Csaba Barath reported on trends leading to the development of decentralized data processing. The spread of large computers was justified primarily by the favorable price/performance which could be attained by them. At the same time, the complexity of the hardware, the concentration of functions, the long installation time and the lack of flexibility can be counted as disadvantages of them. Thus the spread of remote data processing systems began at the same time as the coming into the foreground of requirements connected with precision and the offering of time choices to the user. In traditional remote data processing systems the information processing, data transmission control and the manipulation of the data base take place centrally and thus the complexity of the system and the physical distance between the generation of and the user of the results cause further problems. Thus development brought with it an increase in decentralization. Local data processing also became economical with the development of micro-electronics and the appearance of cheap bulk storage so that development in this direction was very swift. Decentralized computers, with their own operational systems, working with their own data bases

and linked with one another, made their appearance, followed by computer networks which contained for the first time several system components carrying out identical tasks. We can regard as most developed the systems which carry out shared data processing, systems which are functionally indentical but which consist of computers working autonomously while linked to one another. Every member of these systems carries out its own data transmission control and data base manipulation and thus the user can work on the machine of his choice.

In recent years the experts of Videoton, in the course of a successful development of multiterminal real-time systems with large background storage, have dealt with a number of questions which can be regarded as boundary areas for decentralized data processing. Thus they have at their disposal the experience needed for the development and manufacture of elements for systems which will carry out decentralized data processing. Janos Gantner, technical deputy director, reported on developmental plans worked out as an organic continuation of the line followed thus far and on the results of the realization of these plans thus far.

The manufacturing program for the VT processor began 5-6 years ago with the manufacture of the 1010 B and continued 3-4 years ago with the production of the R-10. The chief goal in the further development of the R-10 was to relieve the burden on the central unit; thus, in the R-10M and R-10 models certain functions of the central unit were built into the 1/0 control units or peripherals. These two latter models could be seen at the Budapest International Fair--as was reported in our last issue. But we heard for the first time at this conference about the model temporarily designated the CM 52, which will be the largest member of the MSZR [mini-computer system] and the Videoton computer with the largest performance and capacity. ESZR [Uniform Computer Technology System] approval is planned for this year and marketing is planned for 1979. Instead of the LSI or TTL Schottky circuits used thus far in processors it will contain ECL micro-processors and its memory can be expanded to 1,024 Kbytes. A cache memory and memory interface are built in between the swiftly operating processor and the relatively slower semi-conductor memory. One part of the two card processor contains basic instructions while the other part contains the ECL emulator or optional PDP 11 instructions. The ECL internal bus makes possible swift floating decimal and decimal operations and the bus-interface ensures that one can continue to use the coupling units of earlier models. This system--like the R-10M--is capable of self-diagnosis.

A VT display system family is manufactured or will be manufactured for the processor family. The smallest member of this is the mini-display, which is simple, cheap and teletype compatible. The next group is the VDT (VT Data Terminal) family which satisfies user needs from simple to large performance display. Finally, the member of the family which can have the largest structure, is the VDDS (VT Data Display Station) which is capable of independent mini data processing since it has independent software and a large background storage. (The speaker also noted that Videoton is planning manufacture of graphic displays in the 1980's.)

The VT line printer family was already rather numerous; they manufacture 80 and 132 column line printers with various speeds. The goal of current development in this area is to decrease size, introduce micro-processor diagnostics and expand the services offered by the line printer. Those participating in the conference were introduced to the first achievement--a member of the new family with a speed of 900 lines per minute. A more distant developmental goal is manufacture of a line printer operating with ribbon character carriers, primarily for terminals.

Videoton can also claim successes in the area of manufacturing non-display terminals. Developments here are linked primarily to process terminals and the bank terminal family or business terminals but they are also working on the development of a shop terminal.

At the interesting presentations at the three day conference we heard in detail about the elements of the developmental plan outlined above and about the structural principles and practical realization of some of the equipment. The program included an interesting and useful factory visit. On the basis of their experiences it is certain that the participants at the conference left Szekesfehervar with the knowledge that Videoton can look forward to new successes in the domestic and foreign spread of methods and tools which will serve as a "catalyst for thought" about decentralized data processing.

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COMPUTER BASED REACTOR CONTROL SYSTEM

Budapest SZAMITASTECHNIKA in Hungarian Jul- Aug 78 p 9

[Text] A 2-day seminar, entitled "Reactor Control System Based on the R-10" was presented on 28-29 June at the KFKI [Central Physics Research Institute]. The seminar was jointly organized by the Nuclear Power Research Institute of the KFKI, the R-10 Model Systems Projects Office of SZAMKI [Computer Technology Research Institute] and the VIDEOTON Factory.

The purpose of the seminar was to demonstrate to industry and other branches of the economy the possibility of applying research and development results attained in the course of setting up and working out the reactor control system. Consequently, the seminar was attended by representatives of such diverse industrial branches as the power industry, chemical industry, petroleum industry and the preserving industry.

Dr Miklos Acs stated in his introductory talk that the reactor control research program is being carried out with the support of the National Technical Development Committee and the Atomic Energy Commission. The aim of the project is to lay the groundwork for controlling and monitoring larger nuclear power plants economically and safely as part of the tasks anticipated in the course of implementation of the domestic nuclear power plant program. After several years of theoretical work and simulation, the program has reached the stage where establishment of a computerized model system for controlling the research reactor of the KFKI could be considered a realistic goal. In the course of the lectures, Ervin Zobor of KFKI presented a systems technology overview of a hierarchically structured regulating model system; Akos Szecsodi (Gamma Works) and Attila Baranyi (KFKI) described the instrumentation of the system; Endre Vegh (KFKI) reported in detail on the development of software, the PROCESS-24K program control system; while Gyorgy Pap and Imre Mosoni of VIDEOTON outlined their company's work in development of devices related to process control and its plans.

SZAMOK [International Computer Education Center, ICEC] recently prepared a color video-film for educational purposes. It was entitled: "R-10 Real Time Applications," and it illustrated the work being done at the KFKI. The demonstration was made lively and realistic by the film showing and a viewing of the reactor, especially simulation of a break-down on the control table of the control room. At the time of the demonstration--as the first phase--the computer operated on open cycle, taking care of data processing, logging, and operator informing. However, by the time of our article's publication, closed cycle regulation, the second step, had begun on a trial bases.

During the debate following the lectures and demonstration, the unanimous opinion was arrived at that development of branch model systems was a prerequisite to extensive adoption of computerized process control by industry. In the area of process control, the same path must be followed as was used in the computerization of data processing.

The R & D results achieved with the reactor control model system have proved that this path can be followed with domestic resources and know-how. It is for this reason that VIDEOTON is giving maximum support to discovering the references established by the KFKI and is providing strong backing to the dissemination of process controlling systems which make use of the R-10 in Hungary. However, the matter needs and deserves consumer support, in fact, broader and higher-level coordination as well. We must consider the considerable volume of exports of factories. How long can our complex foreign investments remain competitive on the world market without integrated computerized process control?

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BRIEFS

LASER FOR AMELIORATION PROJECTS--To facilitate agricultural amelioration projects Polish scientists have developed a fully mechanized laying of drainage pipe directed by laser. The laser monitors a cable plow pulling a perforated plastic drainage pipe into the earth. In case of any deviation from the firmly established drainage depth, a component of the machine steering mechanism receives an impulse correcting the deviation. The laser monitoring allows truly minimal deviations only. [Text] [Prague ZEMEDELSKE NOVINY in Czech 31 Aug 78 p 5]

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